No. 620,116. Patented Feb. 28, 1899.

W. A. FUSCH.

GATE FOR BRIDGES.

(Application filed Jan. 24, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

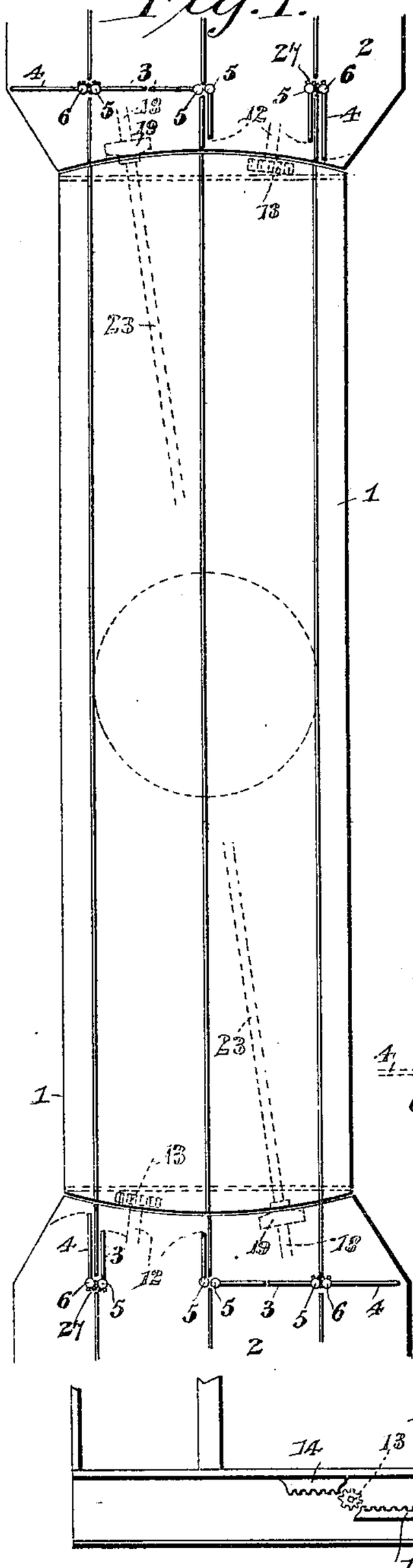


Fig. 2.

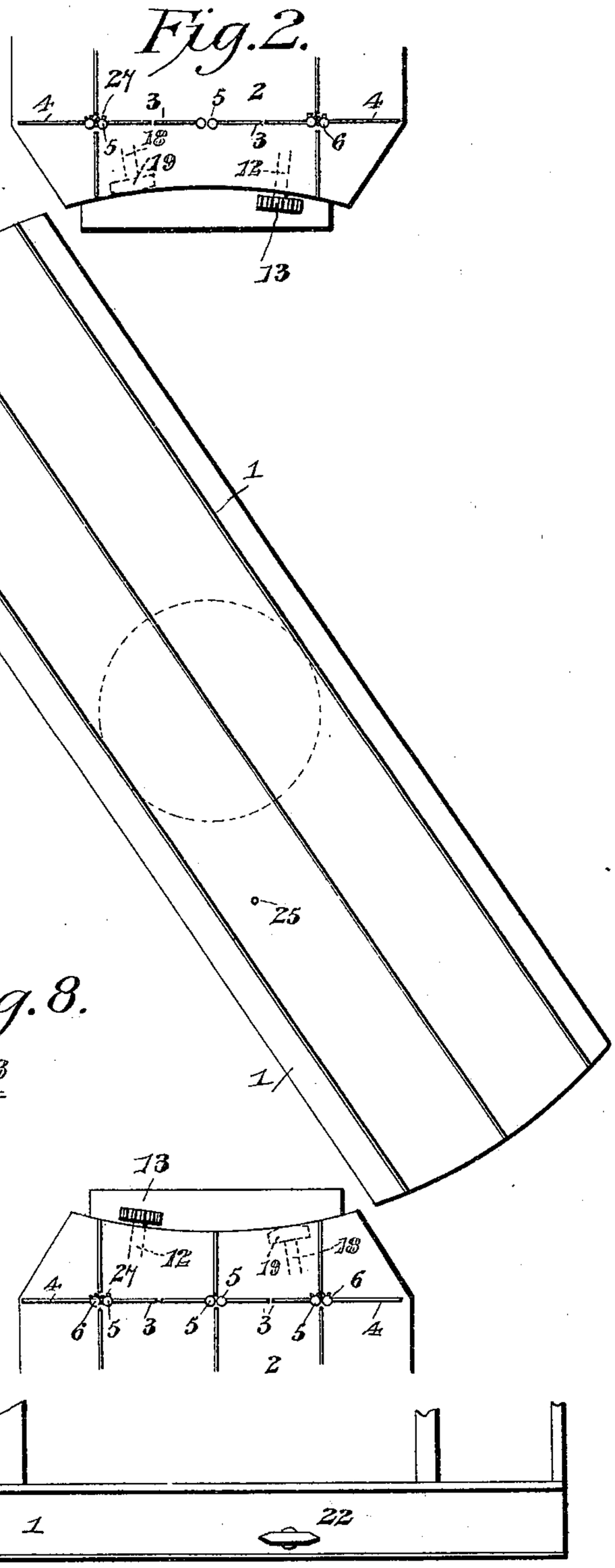


Fig. 8.

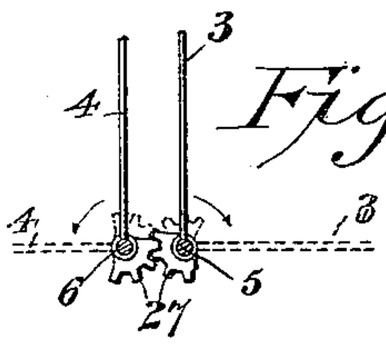
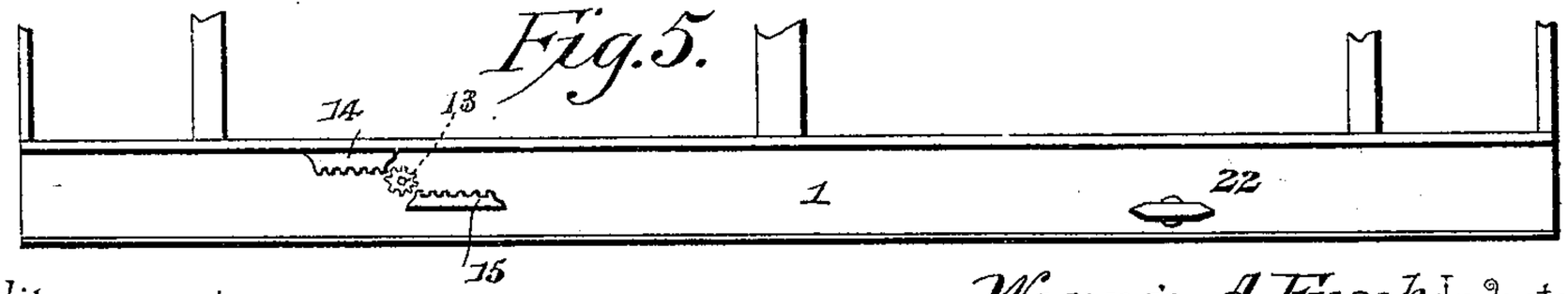


Fig. 5.



Witnesses
Jas. K. McCathran
U. B. Hillyard

Warnie A. Fusch Inventor
By his Attorneys,
C. A. Snow & Co.

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W. A. FUSCH.

GATE FOR BRIDGES.

(Application filed Jan. 24, 1898.)

(No Model.) 2 Sheets—Sheet 2.

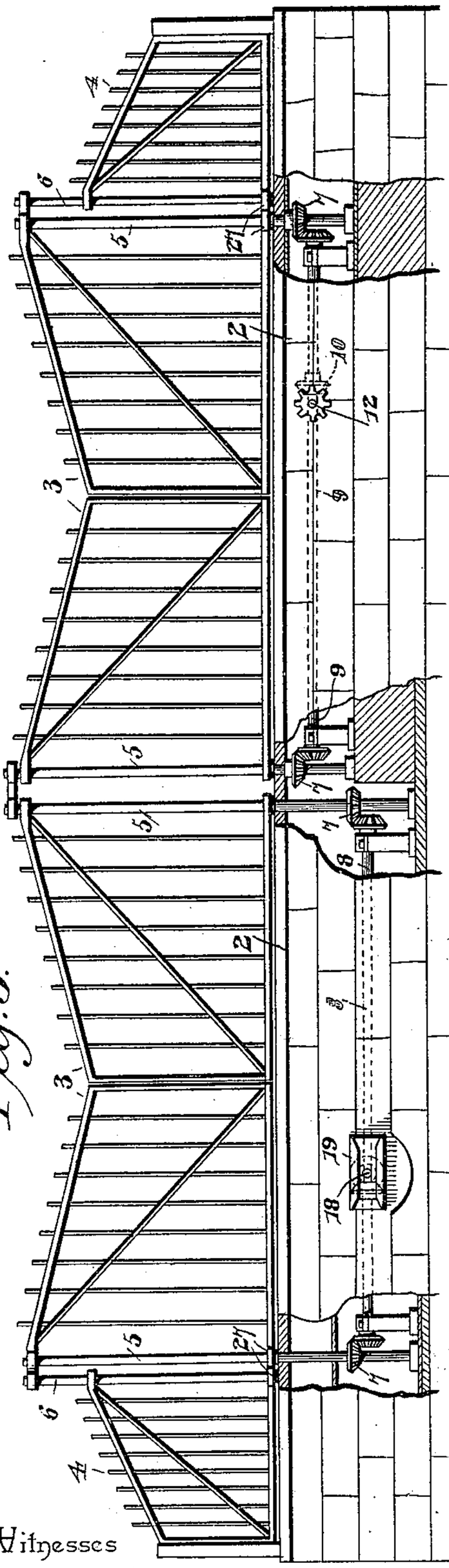

Fig. 3.

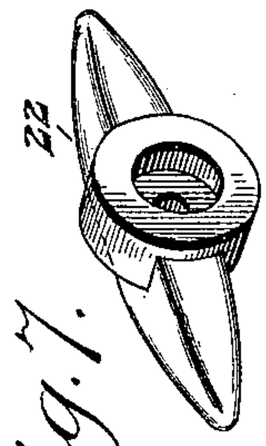

Fig. 7.

Fig. 6.

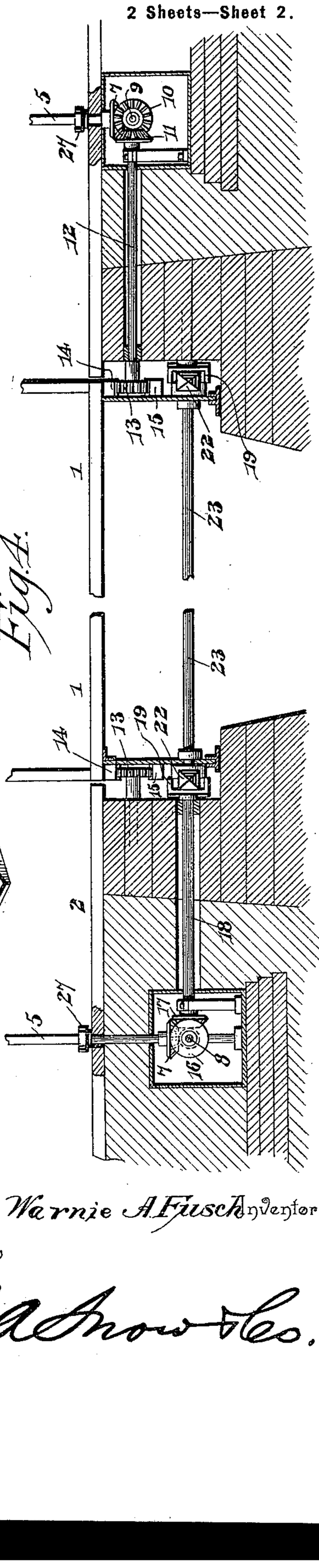

Fig. 4.

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UNITED STATES PATENT OFFICE.

WARNIE A. FUSCH, OF LINCOLN, ILLINOIS, ASSIGNOR OF ONE-HALF TO THOMAS L. BLACKBURN, OF SAME PLACE.

GATE FOR BRIDGES.

SPECIFICATION forming part of Letters Patent No. 620,116, dated February 28, 1899.

Application filed January 24, 1898. Serial No. 667,747. (No model.)

To all whom it may concern:

Be it known that I, WARNIE A. FUSCH, a citizen of the United States, residing at Lincoln, in the county of Logan and State of Illinois, have invented a new and useful Gate for Bridges, of which the following is a specification.

This invention relates to safety appliances for bridges having draws and which shut off travel when the draw is open to admit of a boat passing or for any required purpose. Each end of the bridge or abutment is provided with a set of gates, the diagonally-disposed gates being simultaneously operated and at different times, one set being actuated prior to opening the draw and the other set being automatically operated by means of the draw when opening. By this disposition of the oppositely-disposed sets of gates entrance upon the draw is shut off and provision had for the exit of teams or pedestrians from the draw onto the bridge between the times of closing the first set of gates and the opening of the draw. The style or character of the gates is immaterial and subordinate to the broad features of the invention, which contemplate a peculiar combination of elements for operating the different sets of gates in the manner aforesaid.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a top plan view of the draw portion of a bridge, showing the application of the invention and having a set of diagonally-disposed gates closed and the other set of gates open. Fig. 2 is a view of the parts illustrated in Fig. 1, showing both sets of gates closed and the bridge partly turned. Fig. 3 is a front view of an abutment, parts being broken away and showing the gates closed. Fig. 4 is a longitudinal section of the abutments and the end portions of the bridge, the intermediate portion of the latter being broken away. Fig. 5 is an end view of the bridge. Fig. 6 is a detail perspective view of a member of the clutch. Fig. 7 is a similar view of the other clutch member. Fig. 8 is a detail view of the outer gates, showing the intermeshing gearing and their operation by dotted lines.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The drawbridge 1 may be double, single, or of any approved construction, according to the character of the bridge, and is adapted to be turned by any of the appliances commonly provided for structures of this nature. The approaches or abutments 2 are provided with the gates, by means of which all traffic is closed when the bridge is open. As shown, these gates are of the swinging type, but any form or style may be employed. The bridge has two roadways for vehicles and two sidewalks for pedestrians, one set being for traffic in one direction and the other set for traffic in the opposite direction. Double gates 3 are provided for the roadways and single gates 4 for the sidewalks, and these gates are secured to posts 5 and 6, respectively, which are mounted in suitable bearings, the posts 5 projecting a short distance below the surface of the roadway and provided with bevel-gears 7, which intermesh with corresponding bevel-gears applied to horizontal shafts 8 and 9.

The horizontal shaft 9 is supplied at a point between its ends with a bevel gear-wheel 10, which is in mesh with a corresponding bevel gear-wheel 11 at the inner end of a longitudinal shaft 12, and which is provided at its outer end with a gear-wheel 13, to be engaged by cog-gearing 14 and 15, applied to the end of the bridge. The cog-gearing 14 and 15 is in different planes and disposed to come upon opposite sides of the gear-wheel 13, so that upon opening the bridge in either direction one or the other of the parts 14 and 15 will engage positively with the gear-wheel 13 and rotate it and the shaft 12 and effect a closing of a set of gates. As shown most clearly in Fig. 5, the gear-wheel 13 normally occupies

a position intermediate of the toothed bars 14 and 15, and the latter are of a length to cause the gates to close to their fullest extent when opening the draw and to open when closing the draw. It is to be understood that each end of the gate and each abutment are similarly equipped and the detailed description of one applies to both.

The transverse shaft 8 is provided with a bevel-gear 16, which is in mesh with a companion bevel-gear 17 at the inner end of a longitudinal shaft 18, having a clutch member 19 at its outer end. This clutch member 19 comprises a plate of oblong form and longitudinal ribs 20, spaced apart and having their end portions outwardly divergent to provide flaring spaces 21 to give proper direction to the companion clutch member 22 when entering or about to make clutch engagement with the part 19. The ribs 20, in addition to having their end portions made flaring, have the said terminals beveled slightly, so as not to interfere with the swinging of the bridge when opening and closing. A shaft 23 is journaled longitudinally of the bridge, and the clutch member 22 is secured to its outer end, and when the bridge is closed the shafts 23 and 18 are in alinement and the clutch members 19 and 22 are in engagement, so that motion imparted to the shaft 23 is transmitted to the shaft 18, and through the intermeshing gearing the transverse shaft 8 is operated and the gates in connection therewith are opened or closed, according to the direction of rotation of the shaft 23. The clutch member 22 is oblong, and its end portions are tapering, so as to readily enter the flaring spaces formed between the ribs 20 of the clutch member 19.

As shown in Fig. 1, a shaft 23 is located at each end of the bridge and to one side of a longitudinal medial line and is disposed on a radial line from the axis of the draw. It is obvious that a single shaft may be provided and that suitable means may be employed for connecting the independent shafts to cause them to operate in unison. Any power—hand, steam, electric, or hydraulic—may be used for operating the shafts or shaft, as the case may be, so as to move the gates.

Under normal conditions and when traffic is uninterrupted upon the bridge all the gates are open; but when it is required to open the bridge power is applied to a shaft 23, and by means of the train of connections herein set forth a set of diagonally-disposed gates is closed, as illustrated in Fig. 1, thereby preventing vehicles and pedestrians from passing from the approaches onto the bridge and yet allowing those upon the bridge to pass therefrom onto the approaches prior to the opening of the bridge. Traffic upon the bridge is interrupted a few minutes before the bridge is opened, thereby allowing ample time for vehicles and pedestrians upon the drawbridge to pass therefrom onto the approaches. When the bridge is opened, the other set of gates is closed by means of the toothed plates or bars 14 and 15 in the manner set forth. When the bridge is closed, the set of gates last closed is first opened, and the set of gates first operated is opened by the attendant by applying the power to the part 23 in the manner set forth. The side gates 4 are opened and closed from the main gates 3 adjacent thereto by means of intermeshing toothed segments 27, secured to the subjacent posts 5 and 6, as indicated most clearly in Fig. 8.

Should a bridge be so constructed as not to require the gates to be operated automatically from the draw when the latter is opened or closed, the gearing 13, 14, and 15 may be dispensed with, the clutch elements 19 and 22 serving to connect the shafts 18 and 23 and causing them to operate synchronously. If the gates are to be operated automatically, the parts 19 and 22 may be omitted, thereby permitting the gearing 13, 14, and 15 to operate in the manner set forth. The gearing 14 operates over the gear-wheel 13 and the gearing 15 beneath, according to the direction of movement of the draw.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In combination an abutment having roadways and sidewalks, gates for the roadways, independent gates for the sidewalks connected with the roadway-gates for simultaneous action therewith, transversely-arranged shafts at the end of the abutment having their end portions operatively connected with the outer ends of the roadway-gates, longitudinal shafts geared at their inner ends with the respective transverse shafts, a pinion at the outer end of one of the longitudinal shafts and a clutch member at the outer end of the other longitudinal shaft, a draw, a rack applied to the draw to engage with the pinion and effect an automatic operation of a set of gates for the roadway and sidewalk when moving the draw, a shaft mounted upon the draw and adapted to be operated at will to effect an independent movement of the other set of gates, and a clutch element applied to the last-mentioned shaft and adapted to coöperate with the aforesaid clutch element, substantially in the manner and for the purpose set forth.

2. A device of the nature indicated comprising an abutment having two sets of posts journaled therein and extending below the surface of the abutment, a gate upon each post, the two gates upon the posts of a given set coöperating to open or close the space between said set of posts, miter-gears upon the portions of the posts below the surface of the abutment, the said gears of one set of posts being out of vertical alinement with the gears of the other set, a shaft extending between the posts of each set, each shaft having on its ends miter-gears meshing with the beforementioned gears, whereby rotation of a shaft serves to operate a gate, a miter-gear upon

each shaft intermediate its ends, longitudinal shafts extending beyond the face of the abutment, each such shaft having at its inner end a miter-gear in mesh with the intermediate miter-gear of a cross-shaft, a pinion upon the projecting end of one of said longitudinal shafts, a clutch upon the projecting end of the other of said longitudinal shafts, a draw mounted to reciprocate across the face of the abutment, a rack upon said draw adapted to engage the pinion and thus operate one set of gates during the movement of the draw, a shaft upon said draw having a clutch coöperating with the clutch upon the longitudinal shaft before mentioned, and means for rotating said shaft; substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WARNIE A. FUSCH.

Witnesses:
J. G. SEAL,
J. S. HALLER.